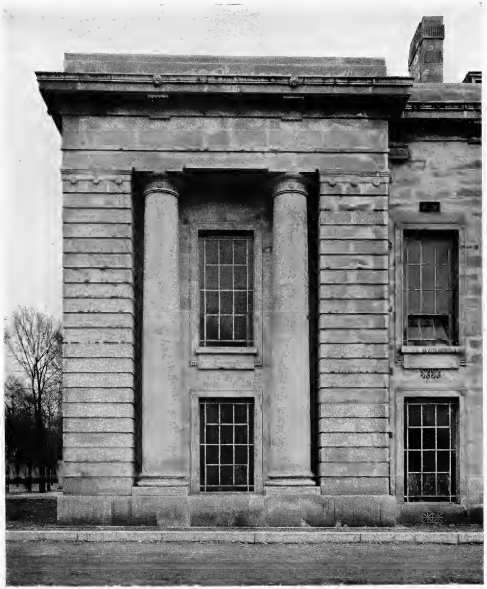
CURRENT ARCHITECTURE.

CARDIFF TECHNICAL INSTITUTE.

GRADUALLY the civic centre in Cathays Park, Cardiff, is being completed. The first building to be erected was the Registry Building by Messrs. Wills and Anderson, about twelve years ago; then followed the City Hall and the Law Courts by Messrs. Lanchester and Rickards, which splendid group of buildings may be regarded as the genesis of the main scheme; and in later years the University College of South Wales and Monmouthshire, by Mr. W. D. Carõe, and the Glamorgan County Hall, by Messrs. Harris and Moodie, were built; while the erection of the National Museum of Wales, by Messrs. Smith and Brewer, has been well advanced, though stopped by the War, and the design has been approved for the building to accommodate the Welsh Insurance Commissioners, by Mr. R. J. Allison of H.M. Office of Works. The ultimate aim is to erect the Welsh Parliament House on the area on the north side, at present vacant; but this is essentially a scheme for the future. Most recent of all the new buildings is the Technical Institute by Messrs. Ivor Jones and Percy Thomas, of Cardiff. Its completion was greatly delayed by the War, which has also caused the furnishing to be postponed, temporary furniture only being used for the rooms required for immediate occupation, while no use is at present being made of the chemistry department, the engineering workshop and laboratory, the bakery, and certain other parts of the building.



END PAVILION ON SIDE ELEVATION.

As in the case of most of the other buildings forming this civic centre, the design for the new Technical Institute was selected in competition, and, as will be seen from the accompanying illustrations, it has worked out most successfully. The elevations are reminiscent of that scholarly type of classical architecture which has distinguished the public buildings of the United States, and the plan shows a freedom from complexity and a convenience of arrangement which is most admirable.

The building adjoins the Glamorgan County Hall, on the west side of the area, facing King Edward VII Avenue. It forms roughly three sides of a quadrangle (the fourth side being reserved for future extension), and consists of three floors—lower ground floor (about five feet below the road level), upper ground floor, and first floor.

The main entrance is in the centre, and leads through the vestibule to the entrance hall. Here on one side is the principal's room, and on the other are the inquiry office, porter's room, waiting-room, clerks' office, etc. At the end of the entrance hall, facing the entrance, is the assembly or examination hall, with platform, retiring-rooms, and emergency exits at the rear, and on either side of the entrance hall are cloak-rooms and the main staircases. This floor is almost on a level with the Avenue. Short wide flights of stairs lead down to the lower ground floor and up to the upper ground floor.

On the lower ground floor are electricity and magnetism laboratories, dark-room, senior physics laboratory, elementary physics laboratory, mechanics' laboratory, electrical engineering laboratory, two class-rooms, building trades lecture-room, architectural and building trades drawing rooms, museum for building trades, three engineering drawing rooms, engineering lecture-room, plan-room, large workshops and laboratory for mechanical engineering, large workshops for carpentry and joinery and for plumbing and gas-fitting, and a bakery, together with a room for the head of the department.

In the basement are the male students' lavatories, etc., four storerooms, a large bicycle-room (with inclined way from outside), and the heating chamber.

On the upper ground floor are rooms for commercial practice, typewriting, five classrooms, four lecture-rooms, one large lecture-room, reference library, students' common-room, male teachers' common-room, female teachers' common-room, a room for the head of the department, male students' lavatories, etc. Lavatories, etc., for teachers are placed on the mezzanine floor between the upper ground floor and the first floor. The

REAR VIEW FROM ROOF LEVEL.

lecture-rooms are provided with folding partitions, enabling each lecture-room to be converted into two classrooms.

On the first floor are the art and chemistry departments, the former containing rooms for drawing from the life and from the antique, rooms for design and art needlework, modelling in clay, casting, and painting and decorating; also rooms for art lectures, oil and water colour, elementary art, dressmaking, and the women's technical department.

The chemistry department contains senior chemistry laboratory, junior chemistry laboratory, chemistry lecture-room, preparation-room, balance-room, and natural science room. On this floor also are two rooms for the heads of departments, art store, chemistry store, and the female students' cloak-rooms, lavatories, etc.

The building is constructed generally of local brickwork, faced with Portland stone on the front and on both the side elevations. The main staircase is of reinforced concrete. The floors throughout are formed of six inches of concrete between rolled steel joists. The main roofs are covered with Dolemaen silver-grey random slates, and the other roofs with Portmadoc blue slates. The halls, corridors, lavatories, etc., are finished with terrazzo flooring, the floors of the rooms being laid with pitch-pine blocks.

Heating is by hot water supplied from central boilers with accelerated circulation. This system provides a particularly uniform temperature throughout the building, and also economises the consumption of fuel. Provision is made for working in sections, and also for shutting off any portion not required. For the ventilating of the building, fresh-air inlets are provided in connection with the radiators, each inlet being under control. The vitiated air is extracted through various openings into sub-ceilings and ducts communicating with two large exhaust fans. A separate fan is also provided for the ventilation of the central hall, and a further ventilating fan for the lavatories. In the chemical department, in addition to the ordinary ventilation of the laboratories, a special fan is provided for extracting the fumes from the closets, this extract being kept quite distinct from the general ventilation of the building.

North light is provided for the art department and for the engineering drawing offices. The windows of the upper and lower ground floors are continued right up to ceiling level, and top light is provided for most of the rooms on the first floor, with dormers for cross-ventilation to the chemistry laboratories, etc. Fireplaces are provided in all rooms for the teaching staff, and in the students' common-room and reference library, offices, etc.

The general contractors for the building were Messrs. E. Turner & Sons, Ltd., of Cardiff, who have been the contractors for most of the buildings in Cathays Park. The clerk of works was Mr. W. R. Irwin.

Steelwork was supplied and erected by Messrs. Archibald D. Dawnay & Sons, Ltd., of London and Cardiff; Portland stone by Mr. F. J. Barnes, of Portland; bricks by The Phœnix Brick Works, of Cardiff; sanitary fittings by Messrs. Shanks & Co., Ltd., of London; patent roof glazing by Messrs. Henry Hope & Sons, Ltd., of Birmingham; steel window frames, wrought-iron staircase balustrading and railings, and bronze electric-light fittings by Messrs. George Wragge, Ltd., of Salford; lead rainwater heads by Messrs. H. W.

ASSEMBLY HALL.

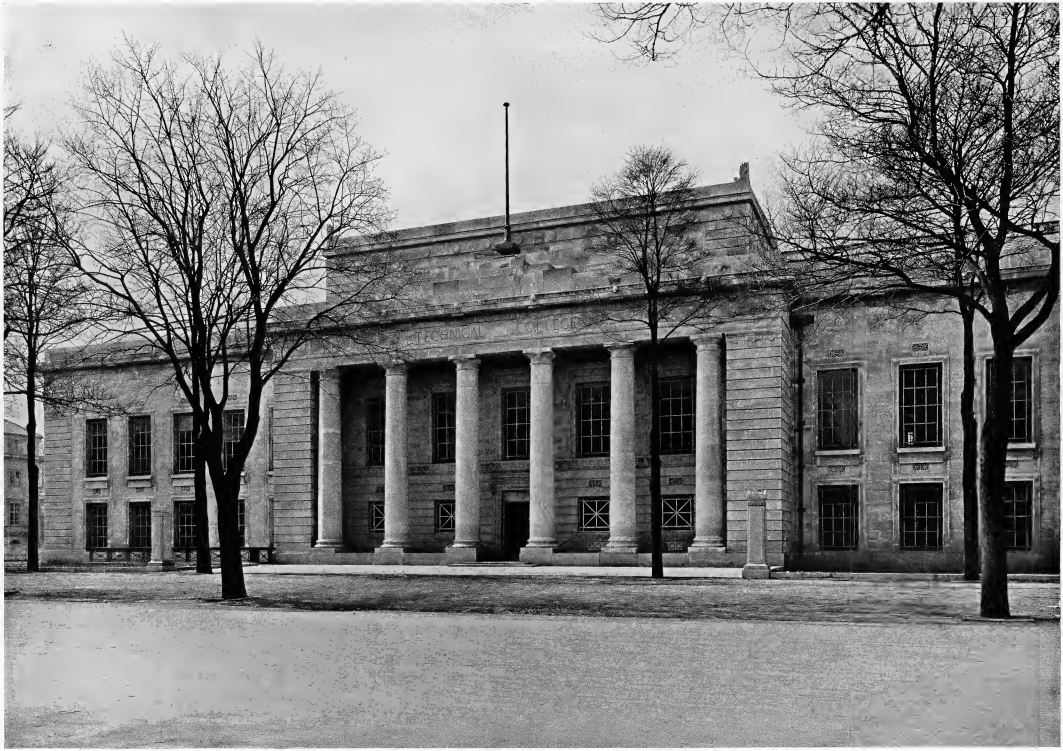


Plate III

NEW TECHNICAL INSTITUTE, CATHAYS PARK, CARDIFF

Ivor Jones and Percy Thomas, Architects

May 1916.

Plate IV. May 1916

NEW TECHNICAL INSTITUTE, CATHAYS PARK, CARDIFF: MAIN ENTRANCE.

Ivor Jones and Percy Thomas, Architects.

ENTRANCE HALL.

Cashmore & Co., of Westminster; oak fencing and gates by Messrs. John P. White & Sons, Ltd., of Bedford; "Soligum" for interior woodwork by Messrs. Major & Co., of Hull; goods lift by Messrs. Smith, Major, and Stevens, of Northampton; heating and ventilating apparatus by Messrs. G. N. Haden & Sons, of Trowbridge; hot-water heater by The Cardiff Gas Co.; folding partitions by The North of England School Furnishing Co., of Darlington; electric-light installation by Messrs. H. J. Cash & Co., of Westminster; fibrous plasterwork in assembly hall by Mr. T. A. Jones, of Cardiff. The stone carving to the main entrance was executed by Mr. Albert H. Hodge, of London.

* * * *

This example from Cardiff is most opportune in its larger significance. It signalises the awakening to a keener sense of the national needs with respect to scientific and technical education. Huxley and Tyndall, it has been sometimes alleged, did almost as much harm as good to science by their combative attitude towards a body of prejudice that it would have been better to conciliate; but nevertheless the fire they kindled has never died out, and the conditions created by the War have caused it to flame up anew. Controversy tinged with a little of the old animus has again arisen. The issue, however, is no longer between science and religion, but between science and the humanities. In effect, it is a squabble among schoolmasters, and is by no means so virulent as to forbid hope of a speedy reconciliation of interests that are not essentially antagonistic. On the one hand, it is clearly perceived that pure and applied science is not the whole duty of man; on the other, that subjective or purely mental training can be easily pushed to an extreme. Indeed, agreement upon these broad lines has been long the accepted basis of middle-class education.

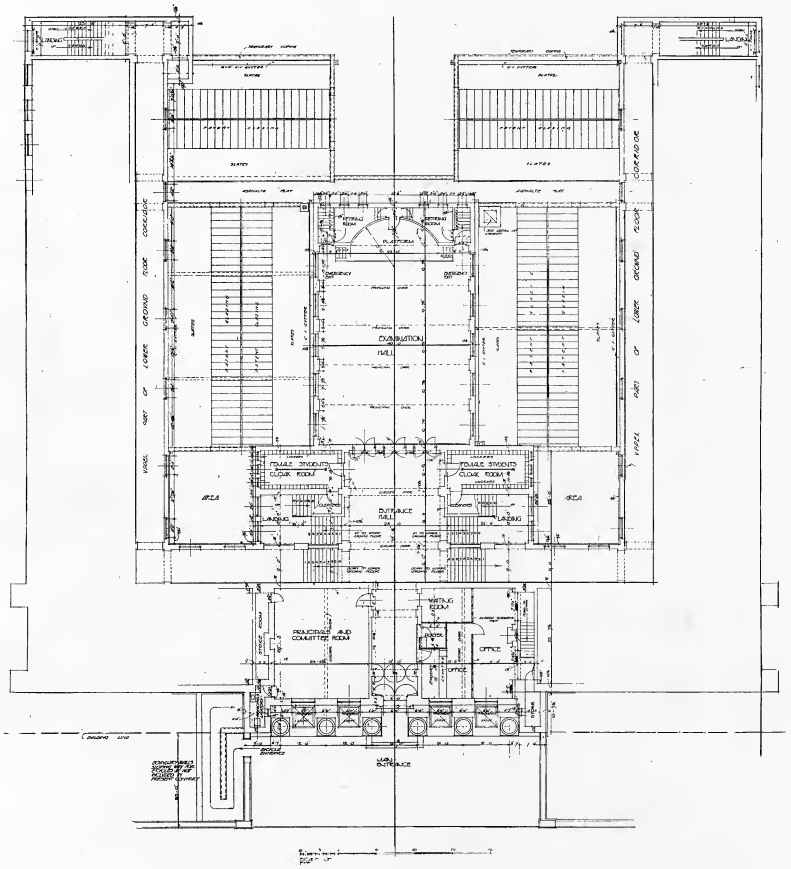
Hitherto, however, science has been regarded rather as a means than an object of education, and it is here that we come upon the real crux of the situation, the problem being how to render scientific teaching more directly practical without undue interference with the all-round development of the pupil. If the choice were left to the boys themselves, "gerund-grinding" would come to a sudden and tragical end. Headwork would stand no chance against handwork; or, rather, the combination of headwork and handwork would give science and the handicrafts an enormous advantage over mere bookwork. That is the catastrophe which the classical side are anxious to avert, and, in the main, they have with them the best educational theorists. Boys cannot be allowed to determine such an issue; but, at the same time, their instinctive preferences should be taken into account more seriously than they have been. To thwart and discourage a boy's scientific bent, either by forcing him to pursue studies for which he has obviously no talent, or by depriving him of the means of developing his natural inclination, is a crime not only against the boy, but against the nation. For, in the great struggle for industrial supremacy which will immediately supervene upon the present war, it will be necessary for us, as for our rivals, to exact the utmost efficiency from every available unit, and it is primarily to our schools—especially to

STAIRCASE AND LANDING, UPPER GROUND FLOOR.

our middle-class schools—that we must look for the fertilisation of this ideal.

Every middle-class school that is not hopelessly out of date has its laboratory, its workshop, and its art room. But the classical head—and the head is most often classical—is apt to be obsessed by the traditional view that these appurtenances are mere recreative addenda to the serious business of preparation for the universities, the professions, the Civil Service, which take but small account of scientific knowledge and none at all of skill of hand. As for the medical profession, that takes care of itself, although certainly its most successful students are those whose scientific bent has been fostered at some school that has a well-equipped laboratory in which cobwebs are not allowed to accumulate.

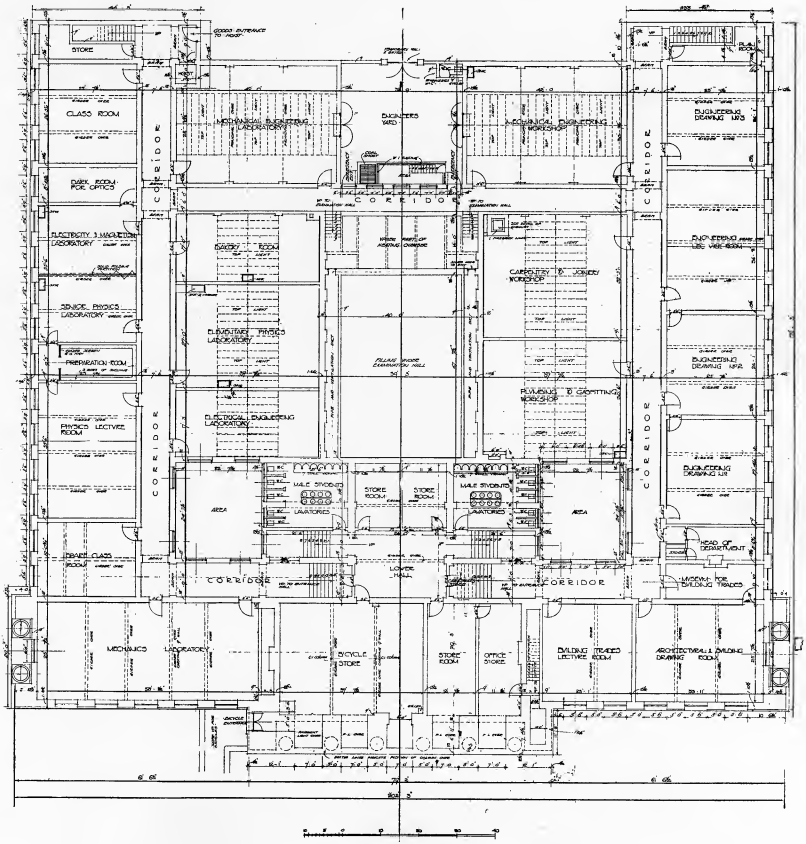
Educationists, however, have now to prepare for a new social era which dawned with the great war. "Slackers" are, and will long continue to be, mere outcasts. Strenuousness is a sort of new gospel, and parents and guardians will have less power and less inclination to despise industrial activity. Merely "ornamental" education will sink to a lower level in



MEZZANINE FLOOR PLAN.

their estimation, and that which is practical—that which seems capable of fitting a boy—or, for that matter, a girl—to become a profitable asset rather than an unproductive burden to the State, will rise in favour. Properly equipped chemical and natural science laboratories, and art classes in the schools and universities, are at the very root of national prosperity. Money spent upon them will be a most remunerative national investment. As Professor Huxley used to say, "It is worth spending a million to discover a Faraday."

In the primary schools also the movement towards efficiency may be expected to receive an enormous impetus. Laboratories, workshops, art rooms, cookery and housewifery teaching has been already established in them, rather tentatively and half-heartedly, at the behest of a few educational enthusiasts who, under the new conditions, must soon assume commanding authority, and they will demand a vast extension of the facilities they have so long advocated, and will get it. These facilities, it has been said, reveal and develop to untold usefulness the small minority—estimated by one distinguished principal as three per cent. of his pupils—who are naturally observant, and who, under technical training, are likely to become the great inventors and masters of industries.



LOWER GROUND FLOOR PLAN.

THE EVOLUTION OF THE ORGAN CASE.

THE evolution of the organ case is somewhat as follows :—The smallest and earliest organs, or regals, could be carried in the hand. One is familiar with their appearance in St. Cecilia pictures. They consisted merely of a row of pandean pipes standing on a wooden windchest and fed by a pair of hand-bellows at the back. The tops of the pipes stand clear, but are sometimes tied together with a strip of wood about two-thirds of the way up. This band survives in some Gothic and later cases, and is almost the only traditional feature retained —in howsoever degraded a shape—in the typical organ-builder's case.

But by the end of the fourteenth century organs had outgrown this simple form, the pipes being enclosed, except in front, in a regular box, finished at the top with pipe-shades and cornice. In these early cases the pipe-ends are visible, taking their natural rake, and stopping short below the pipe-shades. But the practice of leaving the pipe-ends exposed was soon abandoned (except in Italian organs, which form a most interesting group apart), and all the pipe-ends were concealed by carved shades, cut to a gracefully curved outline following more or less the slope of the pipes, the mouths of which often slant in the contrary direction. The pipe-shades are most characteristic and rich parts of all old organ cases; in the earlier examples they are usually formed of pierced tracery, and in the later of foliage carving.

The next step in the growth of the case was the introduction of towers of pipes; the large pipes being generally (but not always) grouped at the extremities of the case; a sensible arrangement, for the bass pipes should preferably be set at the extremities of the sound-board, to avoid robbing the wind from the smaller pipes, as they would do it placed in the natural order of the scale. This may be borne in mind as a suggestion in designing a case, so long as the designer does not allow his freedom in arranging the pipes to be hampered by it.

A very charming feature of constant occurrence in organs up to the last quarter of the eighteenth century was the overhang at the sides, and sometimes in front also. The bellows in old organs required less space than the sound-board over which the pipes stand, so that the device was a constructional one. In modern organs, however, with their extravagant power, the bellows are very large, and often placed apart from the case.

In modern organs one is accustomed to see the pipes "illuminated"—as it is called—and the woodwork left alone, or even varnished. This reverses the proper treatment: it is the woodwork that should be decorated, and the pipes left in their natural colour, or with some slight diapering about the mouths. And this was the practice of the mediæval organ-builders.

In English organs of the seventeenth and eighteenth centuries the woodwork was darkened, and the pipes gilt solid, with good effect. Abroad the later organs were coloured, as their Gothic predecessors had been. In Italy they have a good deal of gilding, which is invariably burnished, and the effect of the rather sparse ornament of the pipe-shades, brilliantly gilt, and hanging against deep shadow (for the pipes usually stop below the shades) is particularly charming. Nothing is more beautiful in its way than the organ and tribune in the Cathedral of Lucca. With the exception of some legends in black lettering on white medallions, the whole is blue and gold.—Extract from an article on "The Organ in Church," by Mr. F. C. Eden, in the *Architectural Association Journal* for March.